Mission: Poor Hotdog! UV Radiation/Sun Exposure

**Overview**

* Students learn about Ultraviolet Radiation and the dangers of sun exposure through experimentation and research. Students create a Public Service announcement to teach a targeted peer group about UV radiation.
* Students gather UV data regularly during the lessons, then use what they’ve learned to build an apparatus that will sunburn one half of a hotdog while protecting the other half completely.

**End Product/Goal:**

PSA (using technology) to teach targeted group of peers about the dangers of UV exposure.

**Suggested Time Frame:** (5 CCA sessions); 1 for intro, 2 for testing, 2 for design/test of cooker)

**Materials/Prep:**

* 8 UV meters (1 for each group of 4 students).
* Student “Mission Notebook” (a notebook in which students keep materials related to each mission. This notebook should be retained by the CCA leader in a crate or housed in a designated area within the room. Students should be instructed to get their mission notebook when they arrive and to return it at the end of the session).
* Pencils
* Building materials for hotdog burner: alum. foil, cardboard, duct tape, scissors, white and black plastic
* Variety of sunblock: 4, 15, 30, 50 SPF
* Variety of cloth squares for testing (loose weave, tight weave, dark and light colors)
* UV sensitive materials for prizes (pencils, Frisbees, etc.)
* Computer(s) with internet access

Engagement/Motivation: Show Forecast Earth video about dangers of UV Radiation and Sun Exposure: <http://www.epa.gov/ozone/science/movies/index.html>

Discuss the following with students:

1. How important is it to protect yourself from UV rays?
2. What do you do to protect yourself?
3. Do you think it’s enough?
4. So why is the rate of skin cancers in the United States rising? (students may or may not be aware of the influence of peers and media on tanning the lack of sunscreen use, and the extended time adolescents spend in the sun).

Show the video (insert video link here) that represents “Peer influence and media messages”…how they do not support scientific findings about dangers of exposure to sun (tanning, lack of sunscreen use, and extended time in the sun in adolescence contributing to the rising rate of skin cancers in the US).

Explain that during this mission, they will:

* Learn more about the sun’s UV rays, will sunburn a hotdog, and create a public service announcement using some pretty cool web 2.0 tools.

Teach kids the science behind the sunburn.

* Pull in scientists from NCI and dermatologists to give the lowdown on incidence of skin cancer (leading cancer…more than other cancers combined). NCI has several researched based studies/programs targeted at MS students
* Have students gather UV Intensity data in different locations outside and inside school (possibly do a scavenger hunt…find the highest and lowest intensity areas. Use this to determine the testing area for the challenge.
* Experiment with variety of sunblocks and fabrics to determine offer best protection against UV rays. Use this to determine what they’ll use for the challenge.
* Challenge: “sunburn” half of a hotdog and protect the other half hotdog (or other item to simulate human skin)? Could this be done indoors with lamps so the module isn’t dependent on weather?
* Winning team…biggest difference between burned/protected halves…wins the UV sensitive prizes.

Show students the “Don’t Fry Day” PSA from the Maryland Skin Cancer Prevention Program Website: <http://www.youtube.com/watch?v=c9RHx9Aqsew>

Design a poster/program/series of 5 minute lessons/bookmarks to teach peers about the dangers of sun exposure using resources linked on the next page. OR maybe pull in a new technology to do this PSA style (podcast, blabberize, animoto…use Heather for more ideas here) to post on the school’s website. (Invite a media advertising or marketing professional, or someone who knows what appeals to teens, to talk to them about how to design their PSA)

CCA class could target specific populations that affect middle school aged kids and teens, and “adopt a” local group:

* Sports teams (coaches)
* Pool (beg. of swim lessons or during “adult swim”)…could be laminated and distributed to lifeguards and
* Summer camps
* Day care providers

What now?

* Become a Sunwise School (EPA)
  + EPA’s Sunwise With Shade Poster Contest <http://www.epa.gov/sunwise/postercontest.html>
  + Enter/view UV Data on the EPA’s site and compare with NWS forecasts: <http://www.epa.gov/sunwise/uvdata.html>
* Complete an individual or group project: science fair, student service learning or scouting
* Maryland Skin Cancer Prevention Program has several online video games aimed at sun safety awareness: <http://www.sunguardman.org/>
* Sun can be fun…make a sun s’more (lesson in which students design s’more packaging and make s’mores using a solar oven they create)

**UV Index Projections**:

<http://www.weather.gov/view/national.php?prodtype=ultraviolet>

<http://oaspub.epa.gov/enviro/uv_search>

<http://www.weather.com/maps/activity/skinprotection/currentuvindex_large.html>

PSA Research resources:

<http://www.brainpop.com/search/search.weml?keyword=radiation>

<http://kidshealth.org/teen/safety/safebasics/tanning.html>